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ICHTHYOLOGICAL CONTRIBUTIONS
of the
INTERNATIONAL GAME FISH ASSOCIATION



Differences in Marlins
based on weights and measurements

J. T. NICHOLS
and
FRANCESCA R. LAMONTE

May 1, 1941

INTERNATIONAL GAME FISH ASSOCIATION
Central Park West at 79th Street
New York City

International Game Fish Association

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American Museum of Natural History
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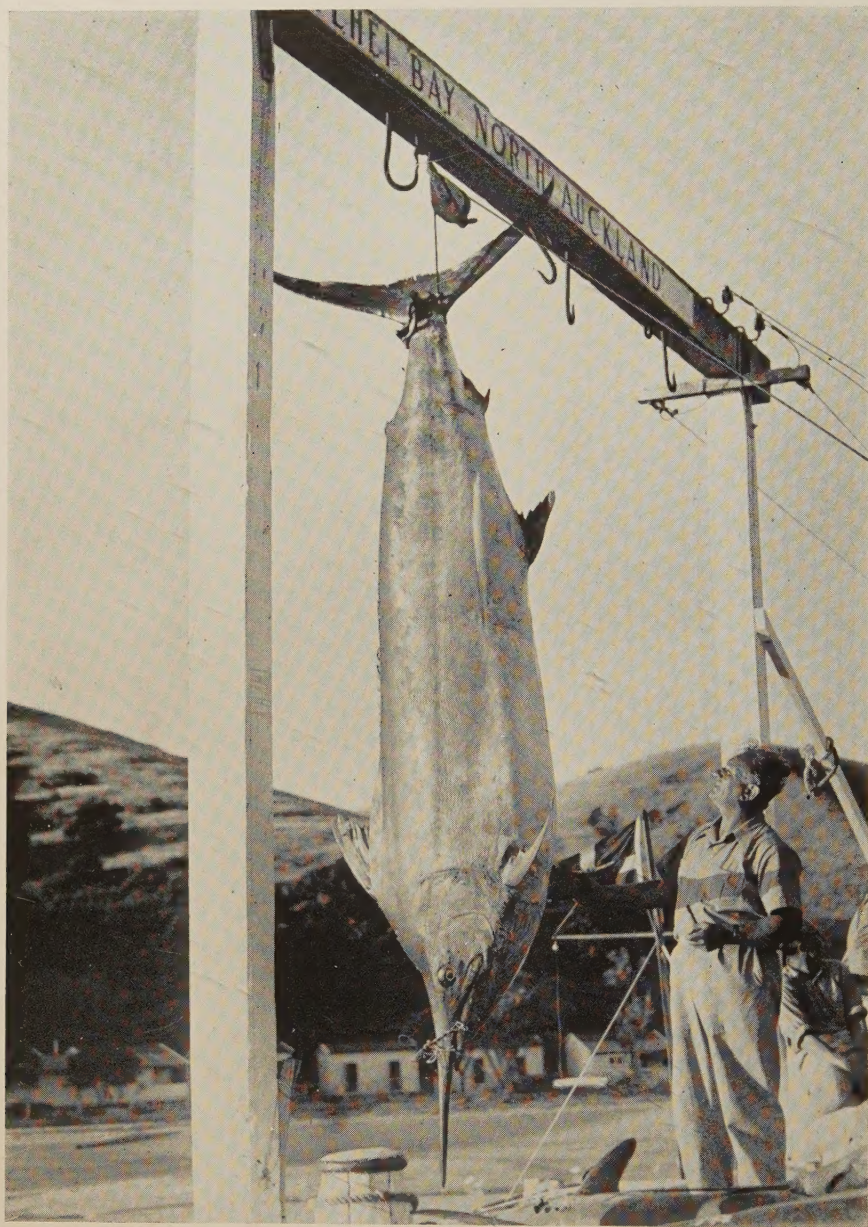


Fig. 1. Pacific Black Marlin (weight 708 pounds) taken off Cape Brett, Bay of Islands, New Zealand, 1939, by Michael Lerner.

Differences in Marlins

Based on Weights and Measurements

J. T. NICHOLS and FRANCESCA R. LAMONTE

One of the objectives of the several Michael Lerner Expeditions of the American Museum of Natural History to date, has been to determine the recognizable kinds of Marlins, the variability and relationships of each, and how they may best be differentiated one from the other, not only by ichthyologists but by sportsmen.

In this connection detailed measurements have been obtained from significant series of the Blue Marlin from the Bahamas, 23 individuals measuring 210 to 304 cm. standard length (from tip of sword or spear to base of caudal fin); in New Zealand and Australian waters of 12 Black Marlin ("New Zealand Black Marlin") measuring 195 to 329 cm., and 30 Striped Marlin ("New Zealand Striped Marlin") measuring 203 to 286 cm.; and off the coast of Chile of 26 Striped Marlin measuring 244 to 302.5 cm.

Whereas further study of the considerable data to hand will doubtless be worth while, and more data as indicated by the study to date will have to be gathered before the problem is satisfactorily settled, certain interesting and we think helpful conclusions may be drawn at this time. These have to do with ratios of a few of the simplest measurements to make accurately, which may also be obtained from photographs, and with weight. It should be understood that the fundamental differences between species of Marlins probably lie in the character of the fins, scales and spear rather than in these measurements (see Nichols and LaMonte, 1935, "How Many Marlins are There?", *Natural History*, Nov., pp. 327-330), which are nevertheless accurate criteria of the species in some cases.

Take first the greatest depth of the body. In figures for the New Zealand Black Marlin this is contained 4.3 to 5.5 times in the length, with a definite slight tendency to deeper body with greater size. Thus in two of 195 to 198.5 cm. it averages 4.95, in two of 328 to 329 cm., 4.45.

In figures for the Blue Marlin depth varies from 4.5 to 5.9, with a similar though less definite tendency. Thus in two of 221 to 225 cm. it averages 5.65, in two of 304 cm., 4.90.

In figures for the Chilean Striped Marlin depth varies from 4.7 to 6.5. This measurement is very variable, masking any increase above lengths of 280 cm. In 4 individuals of 250.5 to 252.7 cm. it averages 5.45; in 8 of 270 to 277.4 cm., 5.12½; but the longest individual, of 302.5 cm., is the most slender with depth 6.5.

In figures for the New Zealand Striped Marlin depth varies from 5.2 to 6.6. There is a slight, fairly definite trend to greater depth in the larger size-groups. In 2 of 203 to 206 cm. depth averages 6.15; in 8 of 271 to 279 cm., 5.61.

Although the majority of Black and Striped Marlin may be differentiated with certainty in Australian and New Zealand waters on this character, depth is obviously too variable to be a good specific character. Another character which proves disappointing is length of spear. The difficulty of obtaining comparable spear measurements from uncertainty as to what basal point to measure from, is obviated by measuring the snout from tip of spear to front of eye. In figures for the New Zealand Black Marlin this snout measurement is contained in that of the entire head from tip of spear to posterior edge of gill-cover, 1.5 to 1.7 times. There is a slight tendency to shorter snout (shorter spear) in larger fish. Thus the snout of 4 specimens of from 195 to 238 cm. is invariably 1.5; that of 8 specimens from 241 to 329 cm. varies from 1.5 (3 specimens) to 1.7 (1), and averages 1.57½.

In figures for the Blue Marlin the snout varies from 1.4 to 1.6, being 1.5 in 18

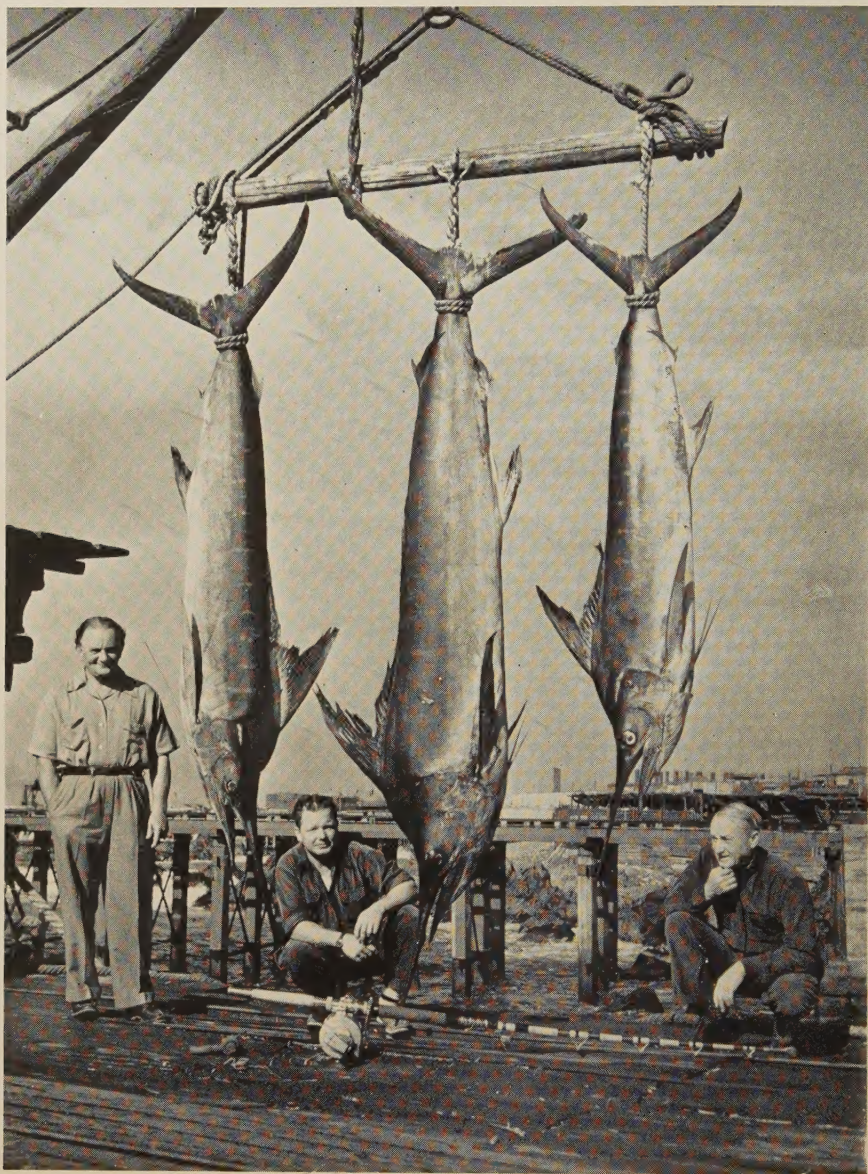


Fig. 2. Three Striped Marlin (weight 198, 375 and 212 pounds) taken off Tocopilla, Chile, May 15, 1940, by Michael Lerner.



Fig. 3. Silver Marlin (weight 504 pounds) taken off Tahiti, July 24, 1931, by Eastham Guild.

individuals of all sizes, 1.6 in 3 of between 281 and 297.2 cm. and 1.4 in one of between 255.8 and 259 cm. Thus from 195 to 273.2 cm (17 individuals) it averages 1.49; from 280 to 304 cm., (6 individuals) 1.55.

In figures for the Chilean Striped Marlin the snout, though still usually 1.5, is most variable, from 1.3 to 1.7, and shows no tangible change with size of fish. It may have some significance that the longest (1.3) and shortest (1.7) snouts both occur only in the size group of from 270 to 277.4 cm.

In figures for the New Zealand Striped Marlin the snout varies from 1.4 to 1.6. It is invariably 1.5 except in the size group from 250.8 to 255 cm. (5 individuals), where it varies from 1.4 to 1.6 (average 1.48), and from 271 to 279 cm. (8 individuals) where it varies from 1.5 to 1.6 (1.52½). It may be noted that this last size group corresponds to that which was most variable in the Chilean Striped Marlin. The first corresponds to that in which the single long-snouted Blue Marlin occurred, and is the next (10 cm. higher) size group to that in which the shortest snouted (1.7) New Zealand Black Marlin is recorded.

The character of the (first) dorsal fin has been found to be one of the best criteria for differentiating the Black Marlin and its relatives (where it is more pointed and heavier in front) from White and Striped Marlin. In contrast to the measurements of depth and sword, the height of this fin (length of its longest ray) is found to be characteristic. It is lower in Black and Blue than in the Striped Marlin.

In figures for the New Zealand Black Marlin the height of the dorsal is contained from 2.5 to 2.9 times in the head (average 2.72).

In figures for the Blue Marlin it is contained 2.2 to 2.9 times (average 2.43).

In figures for the Chilean Striped Marlin it is 1.8 to 2.3 (average 2.09). In those for the New Zealand Striped Marlin it is 1.9 to 2.5 (2.14).

In the New Zealand Black, and Blue Marlins the average relative height of the dorsal is slightly less in small specimens, (those under 240 cm.), respectively 2.82½ versus 2.67 in those of 240 cm. or over, and 2.46 versus 2.42. But in the New Zealand Striped Marlin these smaller individuals average a higher dorsal, 2.05 versus 2.15.

The absolute weight varies widely in the same species of Marlin of the same length. But according to the figures the New Zealand Black and the Blue are heavier than the Striped Marlin. Both these former weigh upwards of 200 pounds at lengths from 230 to 239 cm., whereas the latter first reach 200 pounds from 240 to 249 cm., and do not average over 200 until from 250 to 259 cm. At from 260 to 269 cm. 2 New Zealand Black Marlin weigh 322 to 387 pounds (average 354½), 2 Blue Marlin 326 to 379 (352½), 5 Chilean Striped Marlin 212 to 310 (average 264), 10 New Zealand Striped Marlin 208 to 280 (244). At from 280 to 289 cm. 2 Blue Marlin weigh 362 to 518 pounds (average 440), 4 Chilean Striped Marlin 328 to 403 (360), 2 New Zealand Striped Marlin 287 to 302 (294½). The Chilean Striped Marlin which at 20 cm. less length weighed nearly the same, now is considerably heavier than its New Zealand relative. We have no directly comparable weights of New Zealand Black and Blue Marlin above a length of 270 cm., but apparently at greater lengths, the former becomes considerably the heavier. Between 290 and 309 cm. 4 Blue Marlin vary from 420 to 537 pounds (average 474), little more than from 280 to 289 cm., and between 310 and 329 cm. 3 New Zealand Black Marlin vary from 708 to 815 (average 762).

CONCLUSIONS

In these measurements there are certain slight differences between the Chilean and New Zealand Striped Marlins, such as one might expect in different lots of

the same species from remote parts of the ocean, but nothing to indicate that the two are sufficiently unlike to be recognized as distinct races.

There are more appreciable differences between the New Zealand Black, and the Blue Marlin of the Atlantic, but these are relatively close compared to Black and Striped Marlins, confirming our opinion that Black and Blue are races or geographically representative forms of the same species.

The relatively low dorsal fin and greater weight will differentiate the Black from the Striped Marlin. Thus any Pacific Black or Striped Marlin less than 240 cm. (7 ft. 10½ in.) in standard length (from tip of spear to base of caudal fin) and weighing 200 pounds or more, or less than 310 cm. (10 ft. 2 in.) long and weighing 450 pounds or more, should be a Black; any Pacific Black or Striped Marlin of over 240 cm. (7 ft. 10½ in.) weighing less than 200, or over 260 cm. (8 ft. 6½ in.) weighing less than 300 pounds, should be a Striped Marlin. At from 260 to 269 cm. (8 ft. 6½ to 10 in.) a Striped Marlin should weigh from 205 to 310, a Black from 320 to 390 pounds.

Any Pacific Black or Striped Marlin of over 190 cm. (6 ft. 3 in.) standard length, wherein the height of the dorsal fin is contained more than 2.5 times in the length of head and spear should be a Black, similarly one with height of dorsal fin less than 2.5 in this measurement should be a Striped Marlin.

THE "SILVER MARLIN"

As regards the Tahitian fish we have called Silver Marlin (1935, Amer. Mus. Novitates, No. 807, fig. 1) in the light of these measurements: its low dorsal fin confirms its close relationship to the Black Marlin, of which we considered it a race. It is possible to compute the standard length of this specimen with reasonable certainty as 313.9 cm., at which the expected weight of the Black Marlin would be 700 or more versus 504 pounds. So far as present evidence goes it is as well marked a race of the Black Marlin as is the Blue Marlin of the Atlantic. So much for ichthyologists. For sportsmen, to whom the Blue Marlin, which simply replaces the Pacific Black Marlin in the Atlantic, can cause no confusion, this Tahitian fish, on the other hand, may not be worth the trouble of recognition, except as a form of Black Marlin which does not reach so great a weight.

The sport of marlin fishing has recently grown in popular favor about the Hawaiian Islands, and numerous photographs of marlin taken there have been submitted to the American Museum of Natural History for identification as to species. Earlier attempts to refer some to Black, some to Striped Marlin were unsatisfactory, and now checking their comparative measurements as obtainable from the photographs, against those for Black, Silver and Striped Marlin, we believe all of comparable size are Silver Marlin, and that at least the greater part of all the Hawaiian marlins are referable to this variable form. Unfortunately these photographs are not accompanied by absolute measurements, but the weights of the larger individuals certainly run too low for the true Black Marlin.

If correctly identified the photographs seem to show that the Silver has a consistently long spear, longer than that of the Black Marlin, and it can usually be differentiated by this character. Thus the snout (distance from tip of spear to front of eye) is contained in the whole head an average of 1.43 times in the former, of 1.55 times in the latter; usually 1.4, as much as 1.5 in only about one third of the former, and rarely, or never, more; usually 1.5, rarely or never less than 1.5 in the latter, and sometimes 1.6 or even 1.7.

In so far as our present knowledge goes, the following key will be helpful in identifying Pacific Marlins by measurement.

Pacific Marlins over 6 feet 3 inches in standard length.

- (1) Height of dorsal fin 2.5 or less in the head. Not so heavy, weighing about 200 to 300 pounds at 8 feet 8 inches, 300 to 400 at 9 feet 4 inches standard length.

Striped Marlin

Height of dorsal fin 2.5 or more in head. Heavier, averaging 350 pounds at about 8 feet 8 inches standard length.

See (2)

- (2) Spear longer, the snout 1.4 to 1.5 (usually 1.4, average 1.43) in head. Not so heavy at larger sizes, about 600 pounds or less at 10 feet 6 inches standard length.

Silver Marlin

Spear shorter, the snout 1.5 to 1.7 (usually 1.5, average 1.55) in head. Heavier at larger sizes, about 700 pounds or more at 10 feet 6 inches standard length.

Black Marlin

DISCUSSION OF NOMENCLATURE

The measurements herein discussed confirm our opinion that Blue, Black and Silver Marlins are recognizable races of a single species. On the other hand, they all have a low dorsal lobe whereas *Makaira nigricans* Lacépède, 1803, from the eastern Atlantic had a very high lobe; and it now seems likely that it is specifically different.

In this case the Blue Marlin may stand as *Makaira ampla ampla* (Poey, 1860); Black Marlin as *Makaira ampla marlina* Jordan and Evermann, 1926, credited to Jordan and Hill; Silver Marlin as *Makaira ampla tahitiensis* Nichols and LaMonte, 1935.

The type descriptions of *Makaira mitsukurii* and *Makaira mazara* (both Jordan and Snyder, 1901) are very unsatisfactory, and we can not do better than follow Japanese usage of these names, as in Fisheries Society of Japan, 1931, 'Illust. Jap. Aquatic Plants and Animals', I, Pl. XXVI, fig. 1, 3. Here *M. mitsukurii* is the Striped Marlin, *M. mazara* is very close to both the Silver and Black Marlins, and may stand as *Makaira ampla mazara* (Jordan and Snyder, 1901).

We have found no differences worth subspecific recognition in the Striped Marlin, *Makaira mitsukurii*, on the two sides of the Pacific, and so far none in the Black Marlin, *Makaira ampla marlina* from American west coast and Australian and New Zealand seas. It furthermore seems likely that with more knowledge of the Japanese *M. a. mazara*, either the Silver Marlin *M. a. tahitiensis* or Black Marlin *M. a. marlina* will prove indistinguishable from it, and *mazara* will have to replace *tahitiensis* or *marlina* for one or the other of these forms, as the case may be.

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